

CATGGTAGACGGCTGCCCGAGGGACCACCGCTTGAGACCGCGATGGACGCCAAACATGGTAGCAATCGGGGCCAAG  
 GCCGGAGGGGCTCTCAGGACTTCGGCGGGACTCAAGTACAACCTCCGGCTAGAGAACATGAATGGCTTGAGGAGGGTGTGGA  
 GTTCCTGCCTCGAACATGCCAAGAAAGTGGAGAAGCGAGGCCAGGGCCTGGGTGCTGGCAGTGTCTAGCTTCC  
 TCTTGCCTCCCTCATGGCTGGCTGTGGCACTTCAATTATCGGAATGTGCGGGTCAAAAAGTCTCAATGCCATCTG  
 AGGATCACAATGAGATCTTCTGGATGCGTATGAGAACCTCACCTCCACAGAGTTATCAGCCTGGCAGCCAGGTGAAGGAGC  
 GCTGAAGCTGGTACAATGAAGTCCCTGTCCCTGGGCTACCCACAAGAAGTCGGCTGTAAGTGCCTTCAGTGAAGGGCAGTGTCA  
 TCGCTACTAAGTCAGAGTTCAAGCATCCCCACACCTGGCAGAAGAGGTTGATCGGCCATGGCTGTGGAGCGAGTGTAA  
 TTGCAACCCGAGCACGGCACTGAAATCCTCGTGTAAACATCTGTGGCTTCCCATGACCCAGAACATGCTGCAGGAGC  
 TCAGGACAACAGCTCAGTTGGCCATGGTCAGCAGTGAACAGCTTCAACTACCCCTGGCTTCCAAACAGTCC  
 ACCCGCGCATGGCCAGTGGGCTCTGGGGGGAGCCGCACTGTGCTGAGCCTCACCTCCGAAGCTTGATGTCGCT  
 CCCGTGATGAGCATGGCAGTGGACCTGGTACCCGTGTATGATGAGCCTGAGCCCCATGAAACCCAGCTGTGGTGCAGGCTGTG  
 CACCTTCTCACCCCTCAACCTGACTTCCCTCCCTCCAGAACGCTTCTGTCACGCTGATAACAAACTTGACCCGAGC  
 ATACCTGGCTTGAGGCCACTTCTCCAGTGGCAACAGTGGAGCAGCTGTGGGGTTTGAGTGAACCCAAAGGACATTAGC  
 AGCCCTACTATCCAGGCCACTACCCGCCAACATCAACTGACATGGAAATATCAAGGTGCCAAACCCGAAGCTGAAGGTGCG  
 CTTCAAACCTCTCTATCTGGTGGACCCAAACGTACCGTACGGCTCTGACCAAGGACTATGTGGAGATCAACGGGAGAGTACT  
 GCGGTGAGAGGTCCCAGTTGTGGTGAGCAGCAACAGCAGCAAGATTACAGTCCACTCCATTCTGATCACTCGTACACGGACACC  
 GGGTCTCTAGTGTAGTACCTCTCTACGACTCCACGACGGCTGCCAGGGATGTTCATGTGCAAGACTGGACGGTGCATCCGAAA  
 GGAACCTGCGCTGCGACGGCTGGCAGACTGCCGGATTATAGTGTAGCAGCTGTGGGGACGGAGTGACGAGGAGGGCTGCG  
 TGCTGCTGGAGTTCAAGTGTCAATGGGAAGTGTCTCCCTCAGAGCAGAAGTGTAAATGGGAAGGACAATGTGGAGATGG  
 GTCTGACGAGGCTTCATGTGACAGCGTGAATGTGCTCTGCAACAAATACCTACCGCTGCCAAATGGCTCTGTCAGGCA  
 AGGGCAACCCCTGAGTGTGATGGGAAGACGGACTGTAGCGATGGCTCGATGAGAAAATGTGACTGTGGGCTGCGATCCTTAC  
 AACAGGCTCGGTGGGGTGGCACGAATCGGGACAGGGGAGTGGCCCTGGCAGGTGAGCCTCCACGCCCTGGGCCAGGGCCA  
 CTTGTGGGGCTCGCTCATCTCTCTGACTGGCTGGTCTGCTGAGCTATTGCTTCAGGATGACAAAATTCAAGTACTCG  
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 ATCATCACCCACCCCTTCAATGATTTCACCTCGACTATGACATGCCCTGCTGGAGCTGGAGAAGTCGGTGGAGTACAGCAC  
 CGTCGTGCCCCATCTGCCATGCTACCCATGCTTCCCTGCTGGCAAGGCATCTGGGTACAGGCTGGGGCACACAA  
 AAGAGGGAGGTACCGGAGCGCTGATCCTGAGAAGGGTGGAGATCCGTGTCATCAACCAGACCACCTGTGAGGAGCTATGCCG  
 CAGATCACCCACGAATGATGTGTGGTTCTCAGTGGGGTGTGACTCCTGCCAGGGTACTCTGGTGGCCCTTGTCAAG  
 CGCGGAGAAAGATGGGGAATGTTCAAGGCTGGTGTGGTGAAGGCTGCGTCAGAGGAACAAGCCAGCGTGTACA  
 CAAGGCTCCCTGTAGTCGGACTGGATCAAAGAGCACACTGGGTATAGCAGCATGGACAGACAGCCGACCACAAACACCCACAG  
 GGATGCCGACATGCACACCTGGATACAGGAGAGGAACACTGACGACATTATGCTGTGGCCTCCCCCCCCAACACAACCCAGAC  
 TGTGAACCTGATCCTTAGGACTCAGAGTTCTCAAAGTGGACCCCTCAAGAGTTGGAGAGAGAACATTGCGTGTAGGGCC  
 GCCGGGGCAAGGGTTGATGGCAGCCTTCCCCCTCTAGCCCTGAGCTGGGTGAAGATGATGCTGTGCCCCAGCTGCTTCAA  
 CTGTCATTGAGCTCCGGAGCCCTATGGGAGGGGCTCAGGGTCACTCTTTCAAGGAAGCGCCAGCCCTAGGAACCCAGAAA  
 AGAGTGGTACCTAAGGCTGAAATTGTTGCTGTCAGGGTGGGTATTTGAGAGTAAAACATTTCATTTAAAAAAA  
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MGSNRKRKAGGGSQDFGAGLKYNRSLENMNGFEEGVVFPLPANNA  
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 IPPHLAEVDRAMAKERVVTLPRAKLSFVLTSVAFPIDPRLQRTQDNSCSFAL  
 HAHGAATRFTTPGFPNSPYPAHARQCQVLRGDADSVSLTFRSFVDVPCDEHGSDEL  
 TVYDSLSPMEPHAVVRLCGTFSPSYNLTFLSSQNVFLVTLITNTDRRHPGEATFFQL  
 PKMSSCGFLSDTQGTFSSPPYPGHYPNNINCTWNIKVPNNRNVKVRFKLFLYVDPNV  
 PVGSCTKDYVEINGEKYCGERSQFVVSSNSSKITVHFHSYTDGFLAEYLSYDSN  
 DPCPGMFMCKTGRCIRKELRCDGWADCPDYSDERYCRCNATHQFTCKNQFCKPLFWVC  
 DSVNDCGDSDEEGVSCPAGSKCNSKGKLPQSQKCNKGKDNCGDGSDEASCDSVNVS  
 CTKYTYRCQNLCLSKGNPECDGKTDGSDGSDEKNCDCGLRSFTKQARVVGTTNADEG  
 EWPWQVSLHALGQGHLCGASLILSPDWLSAHCFCQDDKNFKYSDYTMWTAFLGLLDQS  
 KRSASGVQELKLKRITIHPFNDFTFDYDIALLELEKSVEYSTVVRPICLPDATHVFP  
 AGKAIWVTGWGHTKEGGTGAIIQKGEIRVINQTTCEDLMPQQITPRMMCVGFLSGGV  
 DSCQGDGGPLSSAEKDGRMFQAGVVSWECAQRNPKPGVYTRLPVVRDWIKEHTGV  
 (SEQ ID NO:2)

FIGURE 1

**underlined** = deleted in targeting construct

[ ] = sequence flanking Neo insert in targeting construct

CATGGTAGACGGCTGCCCGGAGGGACCACCGCTTGAGACCGGCATCGGACCGCCAAAA  
 CCATGGTAGCACTGGGCCAAGGCCAGGGGCTCTCAGGACTTCGGCGCGGAC  
 TCAAGTACAACCTCCCGCTAGAGAACATGAATGGCTTGAGGAGGGTGGAGTTCTGC  
 CTGCGAACAAATGCCAAGAAAGTGGAGAACGAGGCCAGGCCCTGGGTGGTGGACTTCC  
 CAGTGTGTTCAGCTTCTCTGCTCTCCATGGCTGGCTGCTGGTGTGGCAGTGG  
 ATTATCGGAATGTGCCGGTCAAAAGTCTCAATGGCATCTGAGGATCACAAATGAGA  
 TCTTCTGGATGCGTATGAGAACCTCCACAGAGTTATCAGCCTGGCAGGCCAGG  
 TGAAGGAGGCCTGAAGCTGCTGTACAATGAAGTCCTGTCCTGGGTCCTACCAAGA  
 AGTCGGCTGTAAGTGCCTCAGTGAGGGCAGTGTCACTGCCACTACTGGTCAGAGTTCA  
 GCATCCCCCACACTGGCAGAACAGGTTGATCGGCCATGGCTGTGGAGCGAGTTGAA  
 CATTGCCACCCGAGCACGGCACTGAATCCTCGTCTAACATCTGTGGTGGCCTTCC  
 CCATTGACCCCAGAACATGCTGCAGAGGACTCAGGACAACAGCTGCAGTTGCCCTGCATG  
 CCCATGGTGCAGCAGTGACACGCCACTACCCCTGGCTTCCAAACAGTCCCTACCCGG  
 CGCATGCCCGCTGCCAGTGGCTCTGCCGGGAGGCCAGCTGTGCTGAGCCTCACCT  
 TCCGAAGCTTGATGCTGCTCCCTGTGATGAGCATGGCAGTGACCTGGTACCGTGTATG  
 ATAGCCTGAGCCCCATGGAACCCACGCTGTGGCTGGGCTGTGGCACCTTCTCACCC  
 CCTACAACCTGACTTCTCTCCCAGAACGCTTCTGTGACGCTGATAACCAATA  
 CTGACCGGCACATCTGGCTTGAGGCCACTTCTCCAGCTGCCAAAGATGAGCAGCT  
 GTGGCGGCTTTTGAGTGACACCCAGGACATTAGCAGCCCTACTATCCAGGCCACT  
 ACCCGCCAACATCAACTGCACATGGAATATCAAGGTGCCAACACCGGAACGTGAAGG  
 TCGCCTCAAACCTCTATCTGGTGGACCCAACTGCTTCTGAGGCTTCCAGTGGCTCCTGCACCAAGG  
 ACTATGTGGAGATCAACGGGAGAAGTACTGCGGTGAGAGGTTCCAGTTGTGGTGAGCA  
 GCAACAGCAGCAAGATTACGTCCACTTCCATTCTGATCACTCGTACACGGACACGGGT  
 TCCTAGCTGAGTACCTCTCTACGACTCCAACGACCCGTGCCAGGGATGTTCATGTGCA  
 AGACTGGACGGTGCATCCGAAAGGAACCTGCGCTGCCAGGGCTGGCAGACTGCCGGATT  
 ATAGTGATGAGCGTTACTGCCATGCAATGCCACCCACAGTTCACGTGAAAAACCAAGT  
 TCTGCAAGCCCCCTCTGGGTCTGTGACAGTGTCAACGACTGTGGGAGCGGAAGTGACG  
 AGGAGGGCTGAGCTGCTGTGGAGTTCAAGTGTCCAATGGGAAGTGTCTCCCTC  
 AGAGCCAGAAGTGAATGGGAAGGACAACGTGGAGATGGGTCTGACGAGGCTCATGTG  
 ACAGCGTGAATGCGTCTTGCACCAAAATACCTACCGCTGCCAAATGGCCTCTGTC  
 TGAGCAAGGGCAACCCCTGAGTGTGATGGGAAGACGAGCTGTAGCGATGGCTCGATGAGA  
 AAAACTGTGACTGTGGGCTGCGATCCTTACCAAACAGGCTCGCTGGTGTGGCACGA  
 ATGCGGACGAGGGCAGTGGCCTGGCAGGTGAGCCTCCACGCCCTGGGCAGGGCACT  
 TGTGTGGGCTCGCTCATCTCCCTGACTGGCTGGCTCTGCGAGCTCATGGCTTTCAGG  
 ATGACAAAAATTCAAGTACTCAGACTACAGATGTGGACGCCCTCTGGGTCTGCTGG  
 ACCAGAGCAAGCGCAGTGCCTCTGGGTGAGGAGCTGAAGCTCAAACGTATCATCACCC  
 ACCCTCTTCATGATTTCACCTTCGACTATGACATGCCCTGCTGGAGCTGGAGAAGT  
 CGGTGGAGTACAGCACCGTCGTGCGCCCCATCTGCCCTGCTGATGCTACCCATGTCTCC  
 CTGCTGGCAAGGCCATCTGGTCACAGGTGGGACACAAAAGAGGGAG [GTACCGGA  
 GCGCTGATCCTGCAGAAGGGTGGAGATCGCTGATCAACCAGACCCACGTGAGGACCTC  
 ATGCCGAGCATCCCCACGAATGATGTGTGGGTTCTCTAGTGGGGTGTGGAC  
 TCCTGC] CAGGGTGAECTGGTGGCCCCCTGTCAAGCGCGAGAAAG [ATGGGCAATGT  
 TCCAGGCTGGTGTGGTGGAGCTGGGTGAAGGCTGCCCTGAGAGGAACAAGCCAGGCCGT  
 ACACAAGGCTCCCTGAGTGTGGGACTGGATCAAAGAGCACACTGGGTATAGCAGCATG  
 GACAGACAGCCGACCACAAACACCCACAGGGATGCCGACATGCACACCTGGATACAGGA  
 GAGGAACACTGACGACATTATGCTGTGGCCTCCCCCCCCAACACAAACCCAGACTGTGA  
 ACTGCATCCTTAGGACTCAGAGTTCTCCAAAGTGGGACCCCTCAAGAGTTGGAGAGAG  
 AACCTGCGTGTAGCGGCCAGCCTGGGGCAAGGGTTGATGGCAGCCTCCCCCTCA  
 GCCCTGAGCTGGGTGAAGATGATGCTGTCCCAGGAGCTGCTTCCAACGTGATGAGCT  
 CCCGGAGCCCTATGGGAGGGAGGGCTCAGGTCACTTTCAAGGAAGCGCCAGCCCTA  
 GGAACCCCAGAAAAGAGTGGTACCTAAGGCTGAAAT] TGTTTGCTGTCAGGGGTGG  
 GTATTGAGAGTAAACATTATTCTTTAAAAAAAAAAAAAA

FIGURE 2A

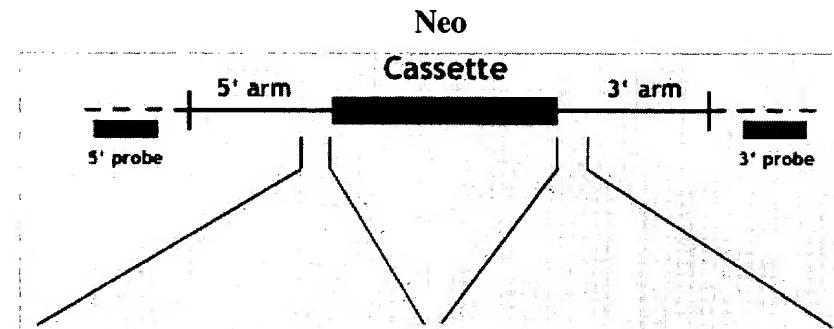


**Targeting Vector\* (genomic sequence)**

Construct Number: 2035

Arm Length:

5': 3.8 kb  
3': 1 kb



— Targeting Vector  
- - - Endogenous Locus

\* Not drawn to scale

5' > TTCCCCATTGAGACTGGCTTA CCCCGGAAGCTGGCTGCCTCAGTC TCCCGCTTCTGTCTCCCCAGGTA CCGGAGCGCTGATCCTGCAGAAGG GTGAGATCCGTGTCAACCAGA CCACCTGTGAGGACCTCATGCCGC AGCAGATCACCCACGAATGATGT GTGTGGGTTTCCTCAGTGGGGTG TGGACTCCTGC<3' (SEQ ID NO:2)	5' > ATGGGCGAATGTTCCAGGCTG GTGTGGTGGGCTGGGGTGAAGGCT GCGCTCAGAGGAACAAGCCAGGCG TGTACACAAGGCTCCCTGTAGTTC GGGACTGGATCAAAGAGCACACTG GGGTATAGCAGCATGGACAGACAG CCGACCCACAAACACCCACAGGGAT GCCCGACATGCACACCTGGATACA GGAGAGGGACA<3' (SEQ ID NO:3)
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FIGURE 2B